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RESEARCH ARTICLE

Sawfly Fauna (Hymenoptera: Symphyta) in the Mordovia State Nature Reserve (Central Russia)

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Abstract

Protected areas are biodiversity hotspots of the world. Knowledge of their overall biodiversity is essential for nature conservation. Sawflies are an integral part of terrestrial ecosystems; being phytophages, they play a significant role in the processing of primary production. The aim of the research was to study the biodiversity of sawflies in the Mordovian Reserve. The research was carried out in 2008, 2009 and 2012-2019 on the territory of the Mordovia State Nature Reserve (Republic of Mordovia, Central part of European Russia). The article provides information on records of 169 species of sawflies of 9 families in the Mordovia State Nature Reserve. The annotated list includes 103 new species for the reserve, of which 1 species (*Dineura parcivalvis*) is listed for the European part of Russia for the first time, and 3 species are specified for the first time for the Central part of European Russia (*Arge beckeri, Rhogogaster genistae, Tenthredo amurica*).

Keywords

new data, biology, Republic of Mordovia.

Introduction

At the beginning of the 21st century, the conservation of biological diversity is considered to be one of the main global tasks of mankind and as the essential

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condition for the stability of ecological systems (Halffter 2005; Robin 2011). The centers of biological diversity in temperate latitudes are nature reserves and national parks (Gray et al. 2016; Ruchin and Khapugin 2019; Ronquist et al. 2020).

The ecological systems preserved in these "hotspot" reserves in their pristine state are unique and they have high biodiversity, unlike the surrounding areas, which are usually subjected to greater anthropogenic impact (Norris 2012; Zografou et al. 2014; Gray et al. 2016; Chifundera 2019; Ruchin and Grishutkin 2018; Uligova et al. 2019; Simonov and Matantseva 2020). Such a unique territory is the Mordovia State Nature Reserve, which is located in the central part of European Russia. The insect diversity of this territory has been studied for the last 15 years. During this time, more than 5000 species of 22 orders have been identified, and many of the recorded species have only been found in Central Russia in this nature reserve (Ruchin and Artaev 2016; Ruchin and Egorov 2017, 2018a, 2018b; Ruchin and Makarkin 2017; Chursina and Ruchin 2018; Ruchin and Mikhailenko 2018; Ruchin et al. 2019; Tomaszewska et al. 2018; Ruchin and Antropov 2019; Dvořák et al. 2020; Egorov et al. 2020; Pilipenko et al. 2020).

However, not all groups of invertebrates have yet been well studied in the Mordovia State Nature Reserve and the order Hymenoptera is one of the least examined. Within Symphyta, 15 families and about 8250 species are known worldwide, 13 families and over 4400 species in the Palaearctic, and 13 families and 1546 species in Russia (Aguiar et al. 2013; Sundukov 2017). They are most diverse in temperate and northern latitudes. For the most part, Symphyta are phytophagous and as primary consumers of plant biomass, they play an essential role the functioning of food webs and natural systems. Many species of sawflies and horntails have been recorded as pests of forests and agricultural plants (Miller et al. 1993; Zombori and Ermolenko 1999; Koch and Smith 2000; Blank et al., 2010, 2013; Prous et al. 2011, 2017; Buda et al. 2017; Liston et al. 2019a; Malagón-Aldana et al. 2019). Our long-term research was aimed to identify the sawflies species composition of the Mordovia State Nature Reserve, doing a review of the literature on the topic and giving full information on the fauna.

Material and methods

Study area

The Mordovia State Nature Reserve is located in the Temnikovsky district of the Republic of Mordovia. It covers an area of 321.62 km^2, of which 90% is forests. The northern border runs along the Satis River, a right tributary of the Moksha, and then along the Arga River, which flows into the Satis River. The western border runs along the rivers Chernaya, Satis and Moksha. To the south are forest-steppe biotopes, naturally delineating the boundary of the conservation area (Tereshkina at al. 2020). The Mordovia State Nature Reserve is in the atlantic-continental temperate zone. Since

the 1930s an increase in the average annual rainfall and the degree of the climate's continentality has been observed (Bayanov 2015). At present, the average annual temperature is + 4.7° (with a maximum of + 5.8° at the end of the 20th century). The average temperature in January is –7.5°, in July + 21°. The frost-free period lasts 120–135 days (from the beginning of May to the second half of September), a stable subzero temperature is established in November. The maximum absolute temperature is + 40° C, the minimum is - 48° C (the winter of 1978-1979). The average annual precipitation is 530 mm (varying from 325 to 767 mm in different years) (Bayanov 2015). The area lies within a zone of coniferous and broad-leaved forest on the border with the forest-steppe.

The vegetation cover has a taiga character with a certain tendency towards an untypical complex during succession. Pine (*Pinus sylvestris* L.) is the main forest-forming species. It forms pure and mixed communities in the southern, central and western parts. Birch (*Betula pendula* Roth) forms the second largest forest area in the reserve. These are predominantly secondary communities on logging sites and burnt pine forests. Especially many young birch trees have grown in the areas where fires took place in 2010. At the same time, communities dominated by other small-leaved species (aspen, alder) can be found in some areas (Khapugin et al. 2016). The linden (*Tilia cordata* Mill.) forests are mainly located in the northern part. These are plant communities that have emerged in the place of pine and linden-spruce forests. The groves of oak cover a relatively small area. Stands of spruce (*Picea abies* L.) and alder (*Alnus glutinosa* (L.) Gaertn.) are predominantly located in the floodplains of rivers and streams, and occupy small areas. The main areas of floodplain meadows are located along the Moksha River in the south-west. The Mordovia State Nature Reserve area is conventionally divided into quarters, with numeration started from the north and continuing from west to east (Fig. 1). A quarter is a square subunit of the forestry cartography (approximately 1 × 1 km), surrounded by glades and roads from south to north and from west to east. Therefore, the distribution of species by quarters is similar to the grid mapping method with a cell size of 1 km^2 (Khapugin and Ruchin 2019; Ruchin and Khapugin 2019).

Sampling procedures

The material was collected in 2008, 2009, and 2012-2019. Collection methods were sweeping with an entomological net, and manual collection on different objects. A total of over 800 specimens have been studied, of which 20 specimens could not be identified to species level, because of their poor condition.

The following abbreviations have been used for the list: "=" – a synonymy of the species name given by previous researchers in their works (the senior synonym is used); "*"– a species new for the Republic of Mordovia; "**"– a species is new for a protected area, ♀- female; ♂-male. Further abbreviations used are quar. – quarter, cord. – cordon (a cordon is a place where the point of protection of the territory of

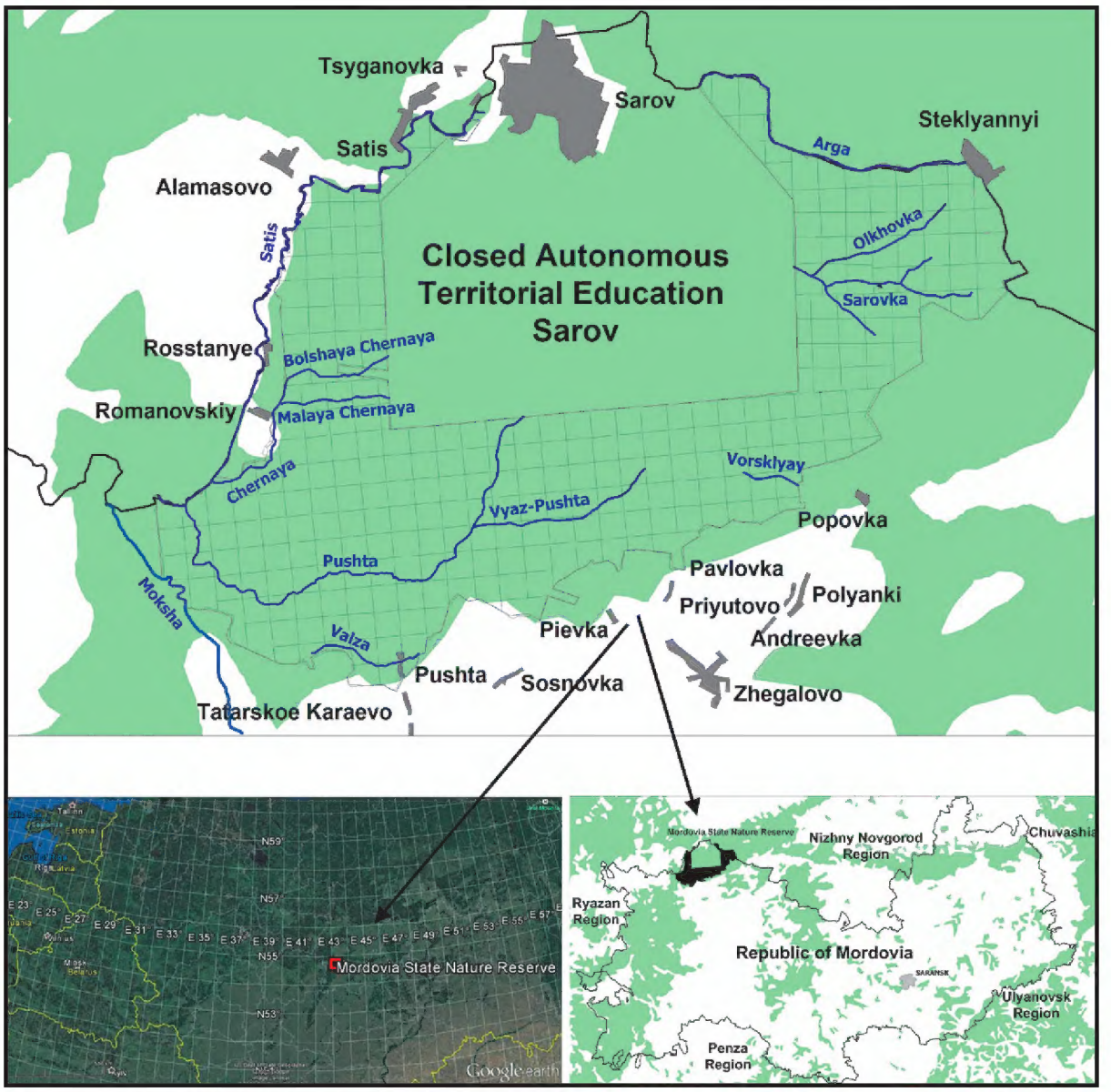

Figure 1. Geographical location of the Mordovia State Nature Reserve.

the reserve once stood or is currently located. Usually such a place is a large clearing with a building), ex. – exemplar(s) (or specimen(s)).

The annotated checklist contains the following information: 1) species name; in some cases, another name is indicated under which the species was previously defined, 2) distribution in the Republic of Mordovia, 3) material, place of collection, date of collection, sex of the insect, surname of the collector (if not indicated, then the surname of the first author), 4) general distribution, 5) remarks.

Identification was done mainly using publications by Zhelochovtsev (1988), and other papers (Ermolenko 1975; Wright 1990; Jansen 1998; Taeger and Blank 1998; Taeger and Viitasaari 2015; Liston et al. 2019b). The nomenclature and order of the families and genera are given following Taeger et al. (2010).

Results

During our research we have registered 1063 new species for the Mordovia State Nature Reserve, of which 81 are new species for the Republic of Mordovia.

Accordingly, we have compiled a list of 169 species from 9 families (Fig. 2) inhabiting the Mordovia State Nature Reserve.

In addition, 1 species (*Dineura parcivalvis*) is listed for the first time for the European part of Russia and another 3 species for Central Russia (*Arge beckeri, Rhogogaster genistae, Tenthredo amurica*).

Suborder Symphyta
Superfamily Cephoidea
Family Cephidae
Subfamily Cephinae

***Calameuta filiformis* (Eversmann, 1847)**

Distribution in Republic of Mordovia (RM). Temnikov district (Feoktistov 2011; Ruchin and Lengesova 2012). Krasnoslobodsk district (Ruchin and Lengesova 2012).

Material. quar. 408, 9.06.2013, 1♀; quar. 434, 5.06.2015 3♀; cord. Podrubhyi, 9.06.2013, 25.05.2014, 2♀, 1♂; quar. 368, 6.06.2012, 11.06.2016, 2♀; quar. 436, 12-27.05.2014, 1♀ (Artaev O.N.); quar. 358, 7.06.2016, 9.06.2016, 2♀; cord. Taratinsky, 19.06.2016, 1♀, 1♂; quar. 275, 25.05.2014, 1♂; Pushta settlement, 21.06.2015, 1♂; cord. Drozhdenovsky, 4.06.2017, 1♀; quar. 442, 2.06.2016, 1♀.

General distribution. Palaearctic.

Remarks. It is usual for various forest types.

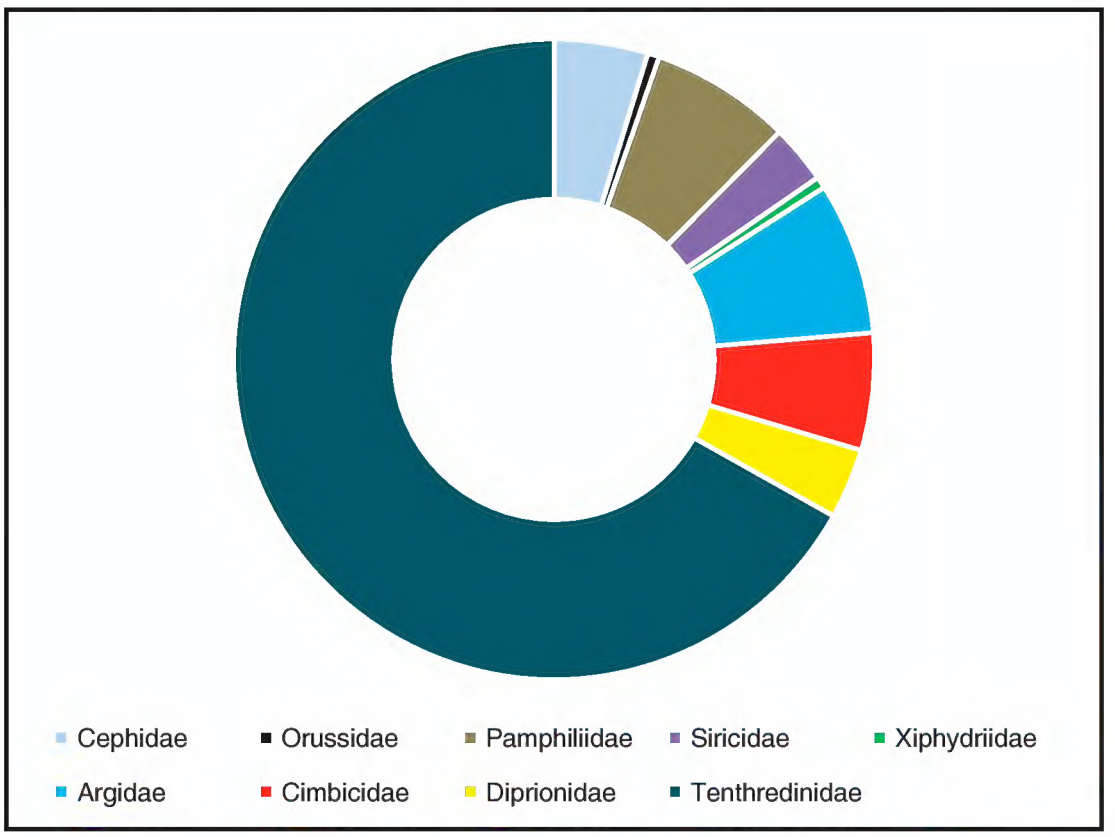

Figure 2. Ratio of the number of species of different families of the sawflies of the Mordovia State Nature Reserve.

Calameuta filum* **(Gussakovskij, 1935)

Material. quar. 421, 29.05.2015, 1♀.

General distribution. Palaearctic.

Remarks. A single specimen was collected in a broad-leaved forest.

***Calameuta pallipes* (Klug, 1803)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Ruchin and Lengesova, 2012).

General distribution. West Palaearctic.

Remarks. This species is rare or only occurs once in collections.

Cephus fumipennis* **Eversmann, 1847

Material. quar. 434, 5.06.2015, 1♀.

General distribution. Palaearctic.

Remarks. A single specimen was collected in a mixed forest.

***Cephus pygmeus* **(Linnaeus, 1767)**

Distribution in RM. Republic of Mordovia (Timraleev 1992).

Material. quar. 417, 3.06.2016, 1♀.

General distribution. Palaearctic, Nearctic.

Remarks. A single specimen collected in a mixed forest.

Cephus sareptanus* **Dovnar-Zapolskij, 1928 [not 1908, 1931]

Material. quar. 431, 2.06.2016, 1♀.

General distribution. Palaearctic region.

Remarks. A single specimen collected in a mixed forest.

***Cephus spinipes* **(Panzer, 1800) (=*cultratus* auct.)**

Distribution in RM. Ichalki district, Krasnoslobodsk district (Ruchin and Lengesova 2012).

Material. quar. 368, 25.05.2012, 1♀; Pushta settlement, 11.06.2012, 1♂; cord. Drozhdenovsky, 18.2016.2017, 1 ♂; quar. 37, 29.05.2016, 2♀; cord. Taratinsky, 19.06.2016, 1♂; quar. 142, 29.05.2016, 1♀.

General distribution. Palaearctic.

Remarks. It is common species. In different habitats.

***Phylloecus linearis* **(Schrank, 1781)**

Distribution in RM. Ruzaevka district, Krasnoslobodsk district (Ruchin and Lengesova 2012).

Material. quar. 37, 18.06.2016, 1♂.

General distribution. West Palaearctic.

Remarks. A single specimen collected in the wet broad-leaved forest.

Superfamily Orussoidea
Family Orussidae
Subfamily Orussinae

***Orussus abietinus* (Scopolli, 1763)**

Distribution in RM. Elniki district, Lyambir district (Ruchin and Kurmaeva 2010). Temnikov district (Feoktistov 2011; Ruchin and Lengesova 2012).

Material. quar. 330, 14.05.2016, 1 ex.; Pushta settlement, 30.05.2008 ♀, 14.05.2018, 18.05.2019, 4 ex.; cord. Steklyanny, 10.05.2012, 13.05.2019, 6 ex. (Egorov L.V.); cord. Novenky, 13.05.2012, 3 ex. (Egorov L.V.); cord. Plotomoika, 15.05.2018, 1 ex. (Egorov L.V.); quar. 408, 18.05.2019, 3 ex. (Semishin G.B.); quar. 418, 27.05.2018, 1 ex. Currently, we cannot indicate the sex of the insects due to the lack of the material.

General distribution. Palaearctic.

Remarks. Often it found on dry tree trunks (pine, alder), occasionally on wooden poles of power lines.

Family Pamphiliidae
Subfamily Cephalciinae

***Acantholyda erythrocephala* (Linnaeus, 1758)**

Distribution in RM. Temnikov district (Feoktistov 2011; Ruchin and Lengesova 2012).

Material. quar. 435, 10.05.2013, 1♂; quar. 302, 15.05.2017, 1♀.

General distribution. Palaearctic.

Remarks. This species is rare or only occurs once in collections.

***Acantholyda hieroglyphica* (Christ, 1791)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Ruchin and Lengesova 2012).

General distribution. Palaearctic.

Remarks. A single specimen collected.

****Acantholyda posticalis pinivora* Enslin, 1918 [not 1917]**

Material. quar. 435, 22.05.2012, 1♀; quar. 446, 26.05.2016, 1♂; quar. 361, 10.05.2016, 1♂.

General distribution. Palaearctic.

Remarks. It is a common species.

****Acantholyda posticalis* Matsumura, 1912**

Material. quar. 431, 9.05.2013, 1♀.

General distribution. East Palaearctic.

Remarks. A single specimen collected in a clearing in the mixed forest.

***Cephalcia abietis* (Linnaeus, 1758)**

Distribution in RM. Temnikov district (Ruchin and Lengesova, 2012).
Material. quar. 408, 19.05.2013, 1♂.
General distribution. Palaearctic.
Remarks. A single specimen collected in a clearing.

***Cephalcia erythrogaster* (Hartig, 1837)**

Distribution in RM. Temnikov district (Ruchin and Lengesova, 2012).
General distribution. Palaearctic.
Remarks. A single specimen collected.

Subfamily Pamphiliinae

****Neurotoma nemoralis* (Linnaeus, 1758)**

Material. cord. Podrubhyi, 20.05.2017, 3♀.
General distribution. West Palaearctic.
Remarks. A single specimen collected in a large clearing in a mixed forest.

****Pamphilius balteatus* (Fallén, 1808)**

Material. quar. 408, 10.05.2014, 1♀.
General distribution. Palaearctic.
Remarks. A single specimen collected in a clearing.

****Pamphilius gyllenhali* (Dahlbom, 1835)**

Material. Pushta settlement, 8.05.2013, 1♀.
General distribution. West Palaearctic.
Remarks. A single specimen collected in a clearing in a mixed forest.

****Pamphilius histrio* Latreille, 1812**

Material. quar. 429, 15.06.2016, 1♂.
General distribution. Palaearctic.
Remarks. A single specimen collected.

****Pamphilius hortorum* (Klug, 1808)**

Material. quar. 35, 29.05.2016, 1♀; quar. 331, 14.05.2016, 1♀.
General distribution. Palaearctic.
Remarks. This species is rare or only occurs once in collections.

****Pamphilius marginatus* (Serville, 1823)**

Material. quar. 403, 9.05.2015, 1♂.
General distribution. West Palaearctic.
Remarks. A single specimen collected.

Superfamily Siricoidea
Family Siricidae
Subfamily Siricinae

***Sirex juvencus* (Linnaeus, 1758)**

Distribution in RM. Temnikov district (Plavilshchikov 1964).

General distribution. Palaearctic, Nearctic, Australasian.

Remarks. It is rare species, included in the Red Book of certain regions of Russia.

***Urocerus gigas* (Linnaeus, 1758)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Ruchin and Lengesova, 2012).

General distribution. Palaearctic.

Remarks. It is rare species, included in the lists of protected species in some regions of Russia.

Subfamily Tremicinae

***Tremex fuscicornis* (Fabricius, 1787)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Ruchin and Lengesova 2012).

Material. Pushta settlement, 1.07.2014, 11.08.2015 2♀; cord. Plotomoika, 12.09.2017, 2♀.

General distribution. Palaearctic, Oriental, Neotropic.

Remarks. It is common species.

******Tremex magus* **(Fabricius, 1787)**

Material. quar. 384, 14.06.2016, 1♂.

General distribution. Palaearctic.

Remarks. A single specimen was found at the 2010 fire sites.

***Xeris spectrum* (Linnaeus, 1758)**

Distribution in RM. Temnikov district (Plavilshchikov 1964).

General distribution. Palaearctic, Nearctic.

Remarks. It is not found in current study.

Family Xiphydriidae
Subfamily Xiphydriinae

***Xiphydria camelus* (Linnaeus, 1758)**

Distribution in RM. Temnikov district (Feoktistov 2011; Ruchin and Lengesova 2012).

General distribution. Palaearctic.

Remarks. This species is rare or only occurs once in collections.

Superfamily Tenthredinoidea
Family Argidae
Subfamily Arginae

****Arge beckeri* Tournier, 1889**

Material. cord. Novenkovsky, 29.06.2016, 1♀.

General distribution. South of Russia, North Caucasus, Southern and Eastern Europe, Turkey (Zhelochovtsev and Zinovjev 1995; Annotated catalogue 2017).

Remarks. It is the first record for Central Russia.

*****Arge ciliaris* (Linnaeus, 1767)**

Distribution in RM. Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 383, 18.07.2016, 1♂; cord. Podrubhyi, 29.05.2016, 1♂.

General distribution. Palaearctic.

Remarks. It was encountered at the 2010 fire sites.

*****Arge cyanocrocea* (Forster, 1771)**

Distribution in RM. Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 276, 26.05.2014, 1♀; quar. 275, 25.05.2014, 1♀.

General distribution. West Palaearctic.

Remarks. It was encountered at the 2010 fire sites.

*****Arge dimidiata* (Fallén, 1808)**

Distribution in RM. Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 408, 10.06.2012, 1♀; quar. 431, 1.06.2014, 1♀; Pushta settlement, 9.06.2012, 1♀.

General distribution. Palaearctic.

Remarks. The species is often found on birch trees.

***Arge enodis* (Linnaeus, 1767)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Ruchin and Lengesova, 2012).

General distribution. Palaearctic.

Remarks. This species is rare or only occurs once in collections.

****Arge gracilicornis* (Klug, 1814) [not 1812]**

Material. cord. Polyansky, 18.05.2014, 1♀; quar. 358, 7.06.2016, 1♀.

General distribution. Palaearctic.

Remarks. The species is usually found on rosaceous plants.

*****Arge nigripes*** **(Retzius, 1783)**

Distribution in RM. Ichalki district (Ruchin and Lengesova, 2012).

Material. quar. 421, 8.06.2014, 1♀; cord. Podrubhyi, 9.06.2013, 1♀; Pushta settlement, 1.07.2012, 1♀; cord. Inorsky, 2.07.2017, 1♂; quar. 368 21.07.2013, 1♀.

General distribution. Palaearctic.

Remarks. It is a frequently occurring species on rosaceous plants.

*****Arge ochropus*** **(Gmelin, 1790)**

Distribution in RM. Ruzaevka district (Ruchin and Lengesova 2012). Ichalki district (Ruchin and Lengesova, 2012).

Material. quar. 408, 9.06.2013, 1♀, 2♀; cord. Podrubhyi, 9.06.2013, 12.06.2013, 2♀; quar. 357, 4.08.2013, 1♀; quar. 421, 8.06.2014, 1♀; quar. 429, 15.06.2016, 1♂.

General distribution. West Palaearctic, Nearctic.

Remarks. It is a common species in mixed forests.

*****Arge pagana*** **(Panzer, 1797)**

Distribution in RM. Ruzaevka district, Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 386, 7.07.2016, 1♀.

General distribution. Palaearctic, Oriental.

Remarks. A single specimen was found at the 2010 fire sites.

****Arge pullata*** **(Zaddach, 1859)**

Material. quar. 448, 19.05.2016, 1♀.

General distribution. Palaearctic.

Remarks. A larvae feed on leaves of birch (*Betula* spp.).

Arge ustulata **(Linnaeus, 1758)**

Distribution in RM. Temnikov district (Feoktistov 2011). Temnikov district, Ichalki district (Ruchin and Lengesova 2012).

Material. cord. Podrubhyi, 25.05.2014, 12.06.2013, 19.07.2016, 3♂.; quar. 360, 21.06.2015, 1♀; quar. 448, 3.08.2013, 1♂; cord. Srednyaya Melnitsa, 17.06.2015, 1♀; quar. 345, 20.06.2015, 1♀; quar. 240, 5.07.2015, 1♀; quar. 142, 11.08.2015, 1♀; quar. 115, 11.07.2015, 1♀; quar. 301, 11.07.2015, 1♀; quar. 82, 28.07.2015, 1♀; quar. 383, 18.07.2016, 1♀; quar. 399, 24.07.2016, 1♀; quar. 431, 21.07.2012, ♀, 2♂; quar. 435, 9.06.2013, 1♂; quar. 408, 9.06.2013, 19.05.2013, 5♂.; quar. 276, 20.07.2014, 1♂; quar. 283, 4.07.2015, 3.07.2016, 2♂; quar. 434, 13.07.2015, 2♂; quar. 398, 24.07.2016, 3♀; quar. 421, 13.06.2016, 1♀; quar. 413, 4.08.2017, 2♀; quar. 397, 6.08.2017, 2♀.

General distribution. Palaearctic.

Remarks. It is a frequently occurring and abundant species. It is found predominantly on willows in moist habitats.

Subfamily Sterictiphorinae

***Aprosthema intermedium* (Zaddach, 1864) (=*hyalinopterum* Conde, 1934)**

Distribution in RM. Temnikov district (Ruchin and Lengesova 2012).

General distribution. West Palaearctic.

Remarks. A single specimen collected.

***Sterictiphora furcata* (Villers, 1789)**

Distribution in RM. Temnikov district (Feoktistov 2011).

General distribution. West Palaearctic.

Remarks. The species is absent in recently collected samples.

Family Cimbicidae
Subfamily Abiinae

***Abia fasciata* (Linnaeus, 1758)**

Distribution in RM. Temnikov district (Plavilshchikov 1964). Ichalki district (Ruchin and Lengesova 2012).

General distribution. Palaearctic.

Remarks. It is not found in current collections.

***Abia aenea* (Klug, 1820) (= *lonicerae* (Linnaeus, 1758)**

Distribution in RM. Temnikov district (Feoktistov 2011).

General distribution. Palaearctic.

Remarks. It is not found in current collections.

***Abia mutica* Thomson, 1871**

Distribution in RM. Temnikov district (Ruchin and Lengesova 2012).

Material. Pushta settlement, 4.2008, 2♂.

General distribution. Palaearctic.

Remarks. It was caught on the edge of the forest.

Subfamily Cimbicinae

***Cimbex femoratus* (Linnaeus, 1758)**

Distribution in RM. Temnikov district (Mozolevskaya et al. 1971). Temnikov district, Ichalki district (Ruchin and Lengesova 2012).

Material. Pushta settlement, 4.07.2012, 1♀; quar. 442, 28.06.2016, 1♀; quar. 368, 11.06.2016, 1♀; quar. 408, 19.05.2013, 1♂; quar. 399, 18.05.2014, 1♂; quar. 420, 28.06.2016, 1♂.

General distribution. Palaearctic.

Remarks. It is common in June and July in birch and mixed forests.

Pseudoclavellaria amerinae* **(Linnaeus, 1758)

Material. quar. 408, 10.05.2014, 1♀.

General distribution. Palaearctic.

Remarks. A single specimen collected at the edge of a mixed forest.

Trichiosoma latreillii* **Leach, 1817

Material. quar. 420, 12.05.2014, 1♀ (Semishin G.B.).

General distribution. Palaearctic.

Remarks. A single specimen collected in a large clearing in a broad-leaved forest.

Trichiosoma lucorum **(Linnaeus, 1758)**

Distribution in RM. Temnikov district (Feoktistov 2011).

General distribution. Palaearctic.

Remarks. It is not found in current collections.

Trichiosoma sylvaticum **Leach, 1817**

Distribution in RM. Temnikov district (Feoktistov 2011).

General distribution. West Palaearctic.

Remarks. It is not found in current collections.

Trichiosoma vitellina **(Linnaeus, 1760)**

Distribution in RM. Temnikov district (Feoktistov 2011; Ruchin and Lengesova 2012).

General distribution. Palaearctic.

Remarks. This species is rare or only occurs once in collections.

Subfamily Coryninae

Corynis crassicornis **(Rossi, 1790)**

Distribution in RM. Temnikov district (Plavilshchikov 1964).

General distribution. Palaearctic region.

Family Diprionidae
Subfamily Diprioninae

Diprion pini **(Linnaeus, 1758)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Mozolevskaya et al. 1971; Ruchin and Lengesova 2012).

General distribution. West Palaearctic.

Remarks. This species is rare or only occurs once in collections.

Gilpinia abieticola* **(Dalla Torre, 1894)

Material. quar. 408, 10.06.2012, 1♀.

General distribution. Palaearctic.

Remarks. It can be found in pine forests and mixed forests on pine trees.

***Gilpinia frutetorum* (Fabricius, 1793)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Mozolevskaya et al. 1971; Ruchin and Lengesova 2012).

General distribution. West Palaearctic, Nearctic.

Remarks. It can be found in pine forests and mixed forests on pine trees.

***Gilpinia hercyniae* (Hartig, 1837)**

Distribution in RM. Temnikov district (Ruchin and Lengesova 2012).

Material. Pushta settlement, 5.2008, 1♀.

General distribution. Palaearctic, Nearctic.

Remarks. It can be found in pine forests and mixed forests on pine trees

***Macrodiprion nemoralis* (Enslin, 1917)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Mozolevskaya et al. 1971; Ruchin and Lengesova 2012).

General distribution. Palaearctic.

Remarks. This species is rare or only occurs once in collections.

***Neodiprion sertifer* (Geoffroy, 1785)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Ruchin and Lengesova, 2012).

Material. Pushta settlement, 6.09.2014, 1♀; quar. 384, 23.08.2015, 1♀; quar. 420, 17.08.2013, 1♂.

General distribution. Palaearctic, Nearctic.

Remarks. It is a pine pest, it can damage the needles.

Family Tenthredinidae
Subfamily Allantinae

****Allantus calceatus* (Klug, 1818)**

Material. quar. 433, 3.06.2016, 1♀; quar. 403, 20.05.2017, 1♀.; quar. 421, 21.05.2017, 1♀.

General distribution. Palaearctic.

Remarks. It is infrequent in mixed forests.

****Allantus cinctus* (Linnaeus, 1758)**

Material. quar. 37, 29.05.2016, 1♀.

General distribution. East Palaearctic.

Remarks. It was caught on the edge of a mixed forest.

****Ametastegia pallipes* (Spinola, 1808)**

Material. cord. Polyansky, 18.05.2014, 1♀.

General distribution. Palaearctic, Nearctic.

Remarks. A single specimen was caught in a clearing.

****Ametastegia equiseti* (Fallén, 1808)**

Material. quar. 408, 19.05.2013, 1♀.; quar. 351, 16.08.2015, 1♂.

General distribution. Palaearctic.

Remarks. This species is rare or only occurs once in collections.

****Ametastegia tenera* (Fallén, 1808)**

Material. quar. 435, 10.05.2013, 1♂.

General distribution. Palaearctic, Nearctic.

Remarks. A single specimen collected.

***Athalia circularis* (Klug, 1815)**

Distribution in RM. Temnikov district (Feoktistov 2011; Ruchin and Lengesova, 2012).

Material. quar. 142, 11.07.2015, 1♀; quar. 301, 11.07.2015, 1♀; quar. 357, 4.08.2013, 1♀; quar. 360, 21.06.2015, 1♂; quar. 421, 13.06.2016, 1♀; quar. 435, 13.06.2016, 1♂; cord. Pavlovsky, 7.08.2017, 1♂ (Semishin G.B.).

General distribution. Palaearctic.

Remarks. A single specimen collected.

****Athalia ancilla ancilla* Serville, 1823 (= *Athalia glabricollis* Thomson, 1871)**

Material. quar. 435, 01.08.2015, 1♂.

General distribution. Palaearctic.

Remarks. A single specimen collected.

***Athalia cordata* Serville, 1823**

Distribution in RM. Temnikov district (Ruchin and Lengesova 2012).

Material. quar. 434, 18.08.2013, 1♀; cord. Podrubhyi, 12.06.2013, 11.05.2015, 2 ♀.

General distribution. West Palaearctic.

Remarks. It occurs in glades and forest edges.

***Athalia rosae rosae* (Linnaeus, 1758)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Ruchin and Lengesova 2012). Ichalki district (Ruchin and Lengesova 2012).

Material. Pushta settlement, 10.07.2008, 1♂.; quar. 435, 8.07.2012, 1♀; 12.08.2008, 1♂; quar. 376, 15.07.2017, 1♀; quar. 35, 29.05.2016, 1♂; quar. 408, 19.05.2013, 1♀; quar. 368, 6.06.2012, 1♀; quar. 431, 21.07.2012, 1♂.

General distribution. Palaearctic.

Remarks. It is a numerous species, usual for open habitats

***Athalia rufoscutellata* Mocsáry, 1879**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Ruchin and Lengesova 2012).

Material. quar. 142, 29.05.2016, 1♀.

General distribution. Palaearctic.

Remarks. A single specimen collected.

******Empria candidata* **(Fallén, 1808)**

Material. quar. 403, 9.05.2015, 1♀; quar. 404, 4.05.2016, 1♂.

General distribution. Palaearctic, Nearctic.

Remarks. It can be found found in wet habitats.

******Eriocampa ovata* **(Linnaeus, 1758)**

Material. cord. Novenkovsky, 29.06.2016, 1♀ (Zvonov A.A.).

General distribution. West Palaearctic, Nearctic.

Remarks. A single specimen caught in a clearing.

***Eriocampa umbratica* (Klug, 1816)**

Distribution in RM. Temnikov district (Feoktistov 2011).

General distribution. West Palaearctic.

Remarks. It is not found in current collections.

******Monostegia abdominalis* **(Fabricius, 1798)**

Material. quar. 420, 31.05.2015, 1♀; quar. 404, 4.05.2016, 1♀.

General distribution. Palaearctic, Nearctic.

Remarks. It can be found in wet habitats.

******Taxonus agrorum* **(Fallén, 1808)**

Material. quar. 430, 12.06.2016, 1♀; quar. 403, 26.05.2016, 1♀.

General distribution. Palaearctic.

Remarks. It can be found in glades in mixed forests.

Subfamily Blennocampinae

******Claremontia alternipes* **(Klug, 1816) (=*Blennocampa finitima* Konow, 1900)**

Material. quar. 404, 4.05.2016, 1♀.

General distribution. Palaearctic.

Remarks. It was discovered on the outskirts of the 2010 fire sites

******Eurhadinoceraea ventralis* **(Panzer, 1799)**

Material. quar. 431, 2.06.2016, 1♀.

General distribution. Palaearctic.

Remarks. It is found in a mixed forest.

****Eutomostethus ephippium* (Panzer, 1798)**

Material. quar. 442, 2.06.2017, 1♀; quar. 430, 12.06.2016, 1♀; quar. 395, 18.05.2014, 1♀; quar. 442, 3.06.2017, 1♀; quar. 417, 3.06.2016, 1♀; cord. Polyansky, 15.05.2014, 1♀.

General distribution. West Palaearctic, Nearctic, Oriental.

Remarks. It is a common species in mixed forests, pine forests.

***Eutomostethus luteiventris* (Klug, 1816)**

Distribution in RM. Temnikov district (Feoktistov 2011).

Material. quar. 364, 11.06.2016, 1♀; quar. 368, 25.05.2012, 1♀.

General distribution. West Palaearctic, Nearctic.

Remarks. It is found in a mixed forest.

****Monophadnus monticola* (Hartig, 1837)**

Material. quar. 448, 11.05.2016, 1♀.

General distribution. West Palaearctic.

Remarks. It was caught in a clearing in a deciduous forest

***Monophadnus pallescens* (Gmelin, 1790) (= *albipes* Gmelin, 1790)**

Distribution in RM. Temnikov district (Feoktistov 2011).

Material. quar. 435, 10.05.2013, 1♀.

General distribution. West Palaearctic, Nearctic.

Remarks. It was found on the edge of the forest road. It forms mines on oak leaves.

***Monophadnoides rubi* (T.W. Harris, 1845) (= *Blennocampa geniculata* Htg.)**

Distribution in RM. Temnikov district (Feoktistov, 2011). Krasnoslobodsk district (Ruchin and Lengesova 2012).

General distribution. Palaearctic, Nearctic.

Remarks. It is not found in current collections.

*****Phymatocera aterrima* (Klug, 1816)**

Distribution in RM. Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 330, 17.06.2016, 1♂.

General distribution. Palaearctic.

Remarks. It was discovered on the outskirts of the 2010 fire sites.

Subfamily Heterarthrinae

***Caliroa cerasi* (Linnaeus, 1758)**

Distribution in RM. Temnikov district (Feoktistov 2011).

General distribution. Palaearctic.

Remarks. It is not found in current collections.

***Caliroa cinxia* (Klug, 1816)**

Material. quar. 360, 27.07.14, 1♀.

General distribution. West Palaearctic.

Remarks. It was discovered on the outskirts of the 2010 fire sites.

***Caliroa varipes* (Klug, 1816)**

Distribution in RM. Temnikov district (Ruchin and Lengesova, 2012).

Material. Pushta settlement, 25.06.2009, 13.05.2014, 2♂; quar. 337, 11.06.2016, 1♀; quar. 389, 11.06.2016, 1♀; quar. 440, 10.06.2016, 1♀.

General distribution. Palaearctic.

Remarks. It is common species. Found in mixed and deciduous forests.

******Fenusa pumila* **Leach, 1817**

Material. quar. 384, 20.VII.2013, a lot of larvae on the leaves in the mines

General distribution. Palaearctic, Nearctic.

Remarks. The larvae form characteristic mines on birch trees.

******Parna tenella* **(Klug, 1816).**

Material. quar. 403, 5.07.2015, larvae in mines on a linden, 1 ex.; quar. 368, 4.07.2015, mines on a linden, 1 ex.; quar. 288, 4.07.2015, mines on a linden, 1 ex.

General distribution. Palaearctic.

Remarks. It mines the leaves of linden trees.

***Profenusa pygmaea* (Klug, 1816)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Ruchin and Lengesova, 2012).

Material. quar. 384, 20.07.2013, larvae in mines on oak leaf, 20 ex.; quar. 427, 20.07.2013, mines on an oak leaf, 3 ex.; quar. 384, 17.06.2014, 1 ex.

General distribution. West Palaearctic.

Remarks. It forms mines on oak leaves.

Subfamily Nematinae

******Cladius brullei* **(Dahlbom, 1835)**

Material. quar. 197, 18.06.2016, 1♀; quar. 408, 10.05.2014, 1♀.

General distribution. Palaearctic, Nearctic, Oriental, Neotropic, Australian.

Remarks. It occurs on the edges of forests.

***Cladius compressicornis* (Fabricius, 1804) (=*pallipes* Lepeletier, 1823, = *padi* auct.)**

Distribution in RM. Temnikov district (Feoktistov 2011; Ruchin and Lengesova 2012).

Material. quar. 358, 9.05.2015, 1♂; quar. 383, 15.05.2016, 1♂.

General distribution. Palaearctic, Nearctic, Oriental.

Remarks. It was discovered on the outskirts of the 2010 fire sites

***Cladius grandis* (Serville, 1823) (=*viminalis* Fallen, 1808)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Ruchin and Lengesova 2012). Ichalki district (Ruchin and Lengesova 2012).

General distribution. Palaearctic, Nearctic.

Remarks. A single specimen collected.

******Cladius hyalopterus* **(Jakovlev, 1891)**

Material. quar. 448, 19.05.2016, 1♀.

General distribution. Palaearctic.

Remarks. It is found in a deciduous forest in the undergrowth.

*******Cladius pectinicornis* **(Geoffroy, 1785)**

Distribution in RM. Temnikov district, Ruzaevka district (Ruchin and Lengesova 2012).

Material. quar. 384, 10.05.2016, 1♀; quar. 421, 13.06.2016, 1♀.

General distribution. Palaearctic, Nearctic, Oriental.

Remarks. It is found in wet habitats.

******Nematus alniastri* **(Scharfenberg, 1805) (=*Craesus alniastri* (Scharfenberg, 1805))**

Material. Pushta settlement, 25.08.2012, 1♀.

General distribution. West Palaearctic, Nearctic.

Remarks. It is found on the edge of the forest.

******Dineura parcivalvis* **(Konow, 1901)**

Material. quar. 435, 11.05.2015, 1♀.

General distribution. Known in Russia from the Irkutsk region (Sundukov 2017) and the Far East (Liston 2015). Found in Europe in Estonia, Finland, Belarus, Czech Republic, Germany (Liston 2015; Liston et al. 2019c).

Remarks. It is first record for the European part of Russia.

******Euura moerens* **(Förster 1854)**

Material. quar. 435, 11.05.2015, 1♀.; quar. 431, 9.05.2013, 1♀.

General distribution. Palaearctic region, Nearctic region.

Remarks. A single specimen collected.

******Euura myosotidis* **(Fabricius, 1804)**

Material. quar. 408, 20.05.2017, 1♀; quar. 368, 21.08.2017, 1♂.

General distribution. Palaearctic.

Remarks. It is found in glades and edges of mixed forests.

****Euura obducta* (Hartig, 1837)**

Material. quar. 384, 20.07.2013, 1♀.

General distribution. Palaearctic, Nearctic.

Remarks. It was discovered on the outskirts of the 2010 fire sites.

***Euura ribesii* (Scopoli, 1763)**

Distribution in RM. Temnikov district (Feoktistov 2011; Ruchin and Lengesova 2012).

General distribution. Palaearctic, Nearctic.

Remarks. A single specimen collected.

****Hemichroa australis* (Serville, 1823)**

Material. quar. 389, 9.08.2014, 1♀; Pushta settlement, 9.06.2012, 1♀; quar. 368, 19.06.2012, 1♀; quar. 399, 18.05.2014, 1♀.

Pushta settlement, 30.05.2008, 2♀. (That these specimens were previously identified as *Hemichroa monticola* Ermolenko, 1960).

General distribution Palaearctic.

Remarks. It occurs in the undergrowth of mixed forest.

****Hoplocampa minuta* (Christ, 1791)**

Material. quar. 448, 11.05.2016, 1♀; quar. 342, 25.05.2015, 1♀.

General distribution. Palaearctic.

Remarks. It is found on the edge of the forest.

****Nematinus fuscipennis* (Serville, 1823)**

Material. quar. 308, 11.06.2016, 2♀.

General distribution. West Palaearctic.

Remarks. A single specimen found in the undergrowth of a pine forest. It is a common species. It occurs in the undergrowth of mixed forest.

****Nematinus luteus* (Panzer, 1803) = *Nematinus willigkiae* Stein, 1926**

Material. quar. 442, 2.06.2016, 1♂.

General distribution. Palaearctic.

Remarks. It is found at the edge of a broad-leaved forest.

****Pristiphora abietina* (Christ, 1791)**

Material. quar. 399, 18.05.2014, 2♀; cord. Polyansky, 18.05.2014, 2♀.; quar. 408, 19.05.2013, 10.05.2014, 3♀; Pushta settlement, 12.05.2014, 3♀.

General distribution. West Palaearctic.

Remarks. It is common sight in glades, glades in forests.

***Pristiphora appendiculata* Hartig, 1837**

Distribution in RM. Temnikov district (Ruchin and Lengesova 2012).

General distribution. Palaearctic, Nearctic.
Remarks. A single specimen collected.

****Pristiphora luteipes* Linqvist, 1955**
Material. quar. 351, 16.08.2015, 1♀.
General distribution. West Palaearctic.
Remarks. It is found in a floodplain meadow.

Subfamily Selandriinae

****Aneugmenus coronatus* (Klug, 1815)**
Material. quar. 431, 1.06.2014, 1.07.2014, 2♀; quar. 448, 6.06.2015, 1♀.
General distribution. Palaearctic.
Remarks. It is found on ferns.

****Aneugmenus fuerstenbergensis* (Konow, 1885)**
Material. cord. Podrubhyi, 12.08.2013, 1♀.
General distribution. West Palaearctic, Oriental.
Remarks. It is found on ferns.

****Aneugmenus padi* Linnaeus, 1758**
Material. quar. 427, 16.06.2014, 1♀; quar. 399, 17.08.2014, 7.07.2015 2♀; cord. Polyansky, 18.05.2014, 1♀.
General distribution. West Palaearctic, Nearctic.
Remarks. It is found on ferns.

****Aneugmenus temporalis* (Thomson, 1871)**
Material. cord. Podrubhyi, 9.06.2013, 1♀; quar. 360, 2.06.2015, 1♀; quar. 308, 11.06.2016, 3♀.
General distribution. Palaearctic.
Remarks. It is found on ferns.

****Brachythops flavens* (Klug, 1816)**
Material. quar. 278, 18.07.2016, 1♂; quar. 435, 5.07.2016, 1♂ (Artaev O.N.).
General distribution. Palaearctic, Nearctic.
Remarks. It occurs in mixed forests.

****Dolerus aericeps* Thomson, 1871**
Material. quar. 448, 11.05.2016, 3♂.
General distribution. Palaearctic.
Remarks. It is found in a deciduous forest. It was discovered on the outskirts of the 2010 fire sites.

****Dolerus asper* Zaddach, 1859**

Material. quar. 434, 6.05.2015, 1♀; quar. 404, 4.05.2016, 1♀; quar. 447, 10.05.2015, 1♀.

General distribution. Palaearctic.

Remarks. It was discovered on the outskirts of the 2010 fire sites.

****Dolerus docilus* Benson, 1956**

Material. cord. Podrubhyi, 29.05.2016, 1♀.

General distribution. Palaearctic.

Remarks. It is found ound on the edge of a large clearing.

****Dolerus germanicus* (Fabricius, 1775)**

Material. cord. Inorsky, 12.05.2014, 1♀ (Artaev O.N.).

General distribution. Palaearctic.

Remarks. It is found in a clearing in a deciduous floodplain forest.

****Dolerus gilvipes* (Klug, 1818)**

Material. cord. Polyansky, 18.05.2014, 1 ♂.

General distribution. West Palaearctic.

Remarks. It is found in a clearing in a mixed forest.

***Dolerus gonager* (Fabricius, 1781)**

Distribution in RM. Temnikov district (Feoktistov 2011; Ruchin and Lengesova 2012).

General distribution.

Remarks. A single specimen collected.

*****Dolerus liogaster* Thomson, 1871**

Distribution in RM. Krasnoslobodsk district (Ruchin and Lengesova 2012).

Material. Pushta settlement, 14.05.2013, 1♀; cord. Inorsky, 2.06.2017, 1♀; quar. 435, 10.05.2013 1♀.

General distribution. West Palaearctic.

Remarks. It is found in meadows and glades.

*****Dolerus niger* (Linnaeus, 1767)**

Distribution in RM. Republic of Mordovia (Timraleev 1992).

Material. quar. 341, 6.05.2015, 1♀.

General distribution. Palaearctic.

Remarks. It is found along the roadside.

***Dolerus nigratus* (Müller, 1776)**

Distribution in RM. Republic of Mordovia (Timraleev 1992). Temnikov district (Ruchin and Lengesova 2012).

Material. quar. 435, 12.04.2008, 19.05.2013, 2♀; Pushta settlement, 6.07.2008, 29.06.2009, 30.04.2013, 14.05.2013, 2♀, 2♂; cord. Podrubhyi, 15.05.2016, 1♀; quar. 403, 9.05.2015, 1♀; quar. 431, 9.05.2013, 1♀.

General distribution. Palaearctic.

Remarks. It is common species of mixed forests.

****Dolerus nitens* Zaddach, 1859**

Material. quar. 420, 5.05.2013, 1♀ (Semishin G.B.)

General distribution. Palaearctic, Nearctic.

Remarks. Collected in a floodplain meadow.

*****Dolerus picipes* (Klug, 1818)**

Distribution in RM. Ichalki district, Krasnoslobodsk district (Ruchin and Lengesova 2012).

Material. quar. 445, 11.05.2016, 1♂.

General distribution. Palaearctic.

Remarks. It is found in the undergrowth of a deciduous forests.

****Dolerus pratensis* (Linnaeus, 1758)**

Material. quar. 403, 26.05.2016, 1♀.

General distribution. Palaearctic, Nearctic.

Remarks. It was discovered on the outskirts of the 2010 fire sites.

****Dolerus pratorum* (Fallén, 1808)**

Material. quar. 442, 2.06.2016, 1♀.

General distribution. Palaearctic.

Remarks. It is found in pine forests.

***Dolerus puncticollis* C.G. Thomson, 1871**

Distribution in RM. Temnikov district (Feoktistov 2011; Ruchin and Lengesova 2012). Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 368, 25.05.2012, 1♀; quar. 342, 25.05.2013, 1♀; quar. 404, 4.05.2016, 1♀; quar. 341, 2.06.2016, 1♀; quar. 435, 10.05.2013, 2♂.

General distribution. West Palaearctic.

Remarks.It is common species, in different habitats.

*****Dolerus vestigialis* (Klug, 1818)**

Distribution in RM. Ichalki district (Ruchin and Lengesova 2012).

Material. cord. Podrubhyi, 15.05.2016, 1♀; quar. 442, 2.06.2016, 3.06.2017, 2 ♂.

General distribution. West Palaearctic.

Remarks. It is found in glades, edges of deciduous forests.

***Nesoselandria morio* (Fabricius, 1781)**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Feoktistov 2011; Ruchin and Lengesova 2012).

Material. quar. 308, 11.06.2016, 2♀; cord. Inorsky, 2.06.2017, 1♂. (Semishin G.B.); quar. 357, 4.08.2013, 1♂.

General distribution. Palaearctic, Nearctic, Oriental.

Remarks. It is found in glades in mixed forests.

******Selandria serva* **(Fabricius, 1793)**

Material. quar. 399, 24.07.2016, 1♀; quar. 384, 20.07.2013, 1♀; quar. 82, 28.07.2015, 1♀; 1♂; quar. 360, 27.07.2014, 2♂.

General distribution. Palaearctic.

Remarks. It is common species of mixed forest.

******Stromboceros delicatulus* **(Fallén, 1808)**

Material. quar. 408, 16.05.2015, 1♂.

General distribution. Palaearctic, Oriental.

Remarks. A single specimen collected in a clearing.

******Strongylogaster filicis* **(Klug, 1817)**

Material. quar. 408, 19.05.2013, 1♂; quar. 445, 31.05.2015, 1♂.; quar. 331, 14.05.2016, 1♂; quar. 435, 9.05.2009, 1♂.

General distribution. Palaearctic.

Remarks. It is common species.

******Strongylogaster mixta* **(Klug, 1817)**

Material. quar. 448, 11.05.2016, 1♀.

General distribution. Palaearctic.

Remarks. It was caught in a deciduous forest.

******Strongylogaster multifasciata* **(Geoffroy, 1785) (= *lineata* (Christ, 1791))**

Material. quar. 387, 10.05.2016, 1♂; quar. 337, 11.06.2016, 4♀; quar. 448, 11.05.2016, 1♀; quar. 435, 10.05.2013, 21.05.2016, 2♀; quar. 407, 21.05.2016, 1♀; cord. Podrubhyi, 4.07.2017, 1 ♀.

General distribution. Palaearctic, Oriental.

Remarks. It is common species. Habitats in glades, forest edges.

******Strongylogaster xanthocera* **(Stephens, 1835)**

Material. quar. 331, 14.05.2016, 1♀; quar. 448, 11.05.2016, 3♀; quar. 435, 10.05.2013, 1♀; quar. 361, 10.05.2016, 1♀; quar. 354, 20.05.2017, 1♀.

General distribution. Palaearctic, Oriental.

Remarks. It is common species. Habitats in glades, forest edges.

Subfamily Tenthredininae

****Aglaostigma aucupariae*** **(Klug, 1817)**

Material. quar. 403, 9.05.2015, 1♀.

General distribution. Palaearctic.

Remarks. A single specimen caught on the outskirts of the burn areas in 2010.

Aglaostigma fulvipes **(Scopoli, 1763)**

Distribution in RM. Temnikov district (Feoktistov 2011).

Material. quar. 435, 8.07.2012, 1♂.

General distribution. Palaearctic.

Remarks. A single specimen collected in a clearing.

*****Macrophya blanda*** **(Fabricius, 1775)**

Distribution in RM. Bolshie Berezniki district, Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 431, 1.06.2014, 1♀.

General distribution. Palaearctic.

Remarks. It is found in mixed forests.

Macrophya duodecimpunctata **(Linnaeus, 1758)**

Distribution in RM. Temnikov district (Feoktistov 2011; Ruchin and Lengesova 2012). Ichalki district, Krasnoslobodsk district (Ruchin and Lengesova 2012).

Material. Pushta settlement, 30.05.2008, 9.06.2012, 3♀; quar. 421, 8.06.2014, 1♀; quar. 408, 10.07.2012, 9.06.2013, 3♀; quar. 427, 16.06.2014, 1♀; quar. 368, 25.05.2012, 3♀.; quar. 421, 8.06.2014, 1♂, 1♀; quar. 442, 2.07.2016, 1♀; quar. 399, 7.07.2015, 1♂; quar. 433, 3.07.2016, 1♂.

General distribution. Palaearctic.

Remarks. It is a numerous persistently occurring species. It is characteristic of different forest types.

****Macrophya infumata*** **Rohwer, 1925**

Material. quar. 433, 3.06.2016, 1♀; quar. 440, 10.06.2016, 1♀.

General distribution. Previously indicated in Russia only from the east of the republic, known from China (Sundukov 2017).

Remarks. The range is extended to the west.

*****Macrophya militaris*** **(Klug, 1817)**

Distribution in RM. Ruzaevka district, Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 435, 8.06.2014, 1♀; cord. Podrubhyi, 9.06.2013, 1♀.

General distribution. West Palaearctic.

Remarks. It is found in large clearings.

****Macrophya montana* (Scopoli, 1763)**

Distribution in RM. Ruzaevka district, Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 358, 9.06.2016, 1♀; quar. 406, 9.06.2013, 1♀; cord. Podrubhyi, 9.06.2013, 12.06.2013, 2♂; quar. 408, 9.06.2013, 2♂.

General distribution. West Palaearctic.

Remarks. It is common species. Occurs in glades, forest edges.

***Macrophya rufipes* (Linnaeus, 1758)**

Distribution in RM. Temnikov district (Ruchin and Lengesova 2012).

Material. Pushta settlement, 30.05.2008, 1♀.

General distribution. West Palaearctic.

Remarks. It is found on the edge of a mixed forest.

***Macrophya sanguinolenta* (Gmelin, 1790)**

Distribution in RM. Temnikov district (Feoktistov 2011). Ichalki district (Ruchin and Lengesova, 2012).

Material. quar. 401, 19.06.2016, 1♀; quar. 420, 7.06.2015, 1♀; quar. 417, 3.06.2016, 1♀, 2♂; cord. Drozhdenovsky, 18.06.2017, 1♀.

General distribution. Palaearctic.

Remarks. It is common species. Occurs in glades, forest edges and roadsides.

***Pachyprotasis antennata* (Klug, 1817)**

Distribution in RM. Temnikov district (Ruchin and Lengesova 2012).

Material. Pushta settlement, 5.2008, 30.05.2008, 2 ♀.

General distribution. Palaearctic, Oriental.

Remarks. It is found on the edge of a mixed forest.

****Pachyprotasis rapae* (Linnaeus, 1767)**

Distribution in RM. Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 399, 7.06.2015, 1♀; quar. 364, 11.06.2016, 1♀, Pushta settlement, 9.06.2012, 2 ♀.

General distribution. Palaearctic, Nearctic, Oriental, Neotropic.

Remarks. It is found in mixed forests.

***Rhogogaster chambersi* Benson, 1947**

Distribution in RM. Temnikov district (Lengesova et al. 2020).

General distribution. West Palaearctic.

Remarks. A single specimen collected

***Rhogogaster viridis* (Linnaeus, 1758)**

Material. quar. 337, 11.06.2016, 1♀; quar. 404, 26.05.2016, 1♀.

General distribution. Palaearctic.

Remarks. It occurs in the shrub layer of mixed forests.

****Rhogogaster genistae* Benson, 1947**

Material. quar. 379, 1.07.2016, 1♀; quar. 308, 11.06.2016, 1♀.

General distribution. West Palaearctic. In Russia it is found in the north of the European part and is widely known in Europe (Sundukov 2017).

Remarks. It is first record for Central Russia.

*****Rhogogaster picta* (Klug, 1817)**

Distribution in RM. Bolshie Berezniki district, Ichalki district (Ruchin and Lengesova 2012).

Material. Pushta settlement, 11.06.2012, 1♀.

General distribution. West Palaearctic.

Remarks. It is found on the edge of a mixed forest.

****Rhogogaster punctulata* (Klug, 1817) [not 1814]**

Material. quar. 360, 21.06.2015, 1♀.

General distribution. Palaearctic.

Remarks. It is found in the burn areas in 2010.

****Rhogogaster scalaris* (Klug,1817)**

Material. quar. 337, 11.06.2016, 1♀; quar. 404, 26.05.2016, 1♀; quar. 420, 27.07.2015, 1♀; cord. Drozhdenovsky, 18.06.2017, 1♀; quar. 319 13.07.2017, 1♀.

General distribution. Palaearctic, Nearctic, Oriental.

Remarks. It is found in the glades of the forest.

***Tenthredo amoena* Gravenhorst, 1807**

Distribution in RM. Temnikov district, Ruzaevka district, Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 435, 25.07.2009, 1♀; quar. 323, 27.07.2009, 1♀; cord. Plotomoika, 3.08.2014, 1♀, 1♂; quar. 431, 21.07.2012, 2♂; quar. 86, 12.07.2014, 1♂; cord. Novenkovsky, 13.07.2014, 1♂.

General distribution. West Palaearctic.

Remarks. It is a frequently occurring species.

****Tenthredo amurica* Dalla Torre, 1894**

Material. quar. 413, 12.06.2016, 1♀.

General distribution. In Russia it is found in the north of the European part, in Eastern Siberia and the Far East. In Europe, it is known from the western and northern parts (Sundukov 2017).

Remarks. It is first record for Central Russia.

***Tenthredo arcuata* Forster, 1771**

Distribution in RM. Bolshie Berezniki district (Loginova et al. 2001). Temnikov district, Ruzaevka district (Ruchin and Lengesova 2012).

Material. quar. 435, 25.07.2009, 29.07.2009, 2♀, 1♂; quar. 323, 24.07.2009, 1♀, 1♂, cord. Polyansky, 17.08.2014, 1♀; quar. 434, 22.08.2015, 1♀; quar. 431, 21.07.2012, 2♀; quar. 276, 20.07.2014, 1♂, 1♀; quar. 398, 24.07.2016, 3♀; cord. Plotomoika, 3.08.2014, 1♂; quar. 400, 13.08.2015, 1♀; quar. 397, 6.08.2017, 1 ♀; quar. 420, 6.08.2017, 2 ♀.

General distribution. Palaearctic.

Remarks. It is common species. It occurs in glades, forest edges.

***Tenthredo atra* Linnaeus, 1758**

Distribution in RM. Temnikov district (Plavilshchikov 1964; Ruchin and Lengesova 2012).

General distribution. Palaearctic.

Remarks. A single specimen collected.

***Tenthredo campestris* Linnaeus, 1758**

Distribution in RM. Temnikov district (Feoktistov 2011; Ruchin and Lengesova 2012). Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 435, 25.07.2009, 1♀; quar. 420, 31.05.2015, 1♂.

General distribution. Palaearctic.

Remarks. It is found in glades in mixed forests.

****Tenthredo colon* Klug, 1817 [not 1814]**

Material. quar. 431, 23.04.2013, 1♀; quar. 360, 21.06.2015, 1♂, 2♀; quar. 384, 17.06.2014, 21.06.2015 1♀, 1♂; quar. 399, 7.06.2015, 1 ♀; quar. 430, 12.06.2016, 12.07.2016, 3♂.

General distribution. Palaearctic, Nearctic.

Remarks. It is common forest species.

****Tenthredo crassa* Scopoli, 1763**

Material. quar. 301, 20.07.2014, 1♀.

General distribution. Palaearctic.

Remarks. It is found in a clearing in a mixed forest.

***Tenthredo ferruginea* Schrank, 1776**

Distribution in RM. Temnikov district (Feoktistov 2011; Ruchin and Lengesova 2012).

General distribution. Palaearctic, Oriental.

Remarks. A single specimen collected.

***Tenthredo marginella* Fabricius, 1793**

Distribution in RM. Temnikov district, Bolshie Berezniki district, Ichalki district (Ruchin and Lengesova 2012).

Material. Pushta settlement, 30.05.2008, 1♀.

General distribution. Palaearctic.

Remarks. It is found in a clearing in a mixed forest.

*****Tenthredo mesomela* Linnaeus, 1758**

Distribution in RM. Bolshie Berezniki district (Loginova et al. 2001). Ruzaevka district (Ruchin and Lengesova 2012).

Material. quar. 431, 1.06.2014, 1♂; quar. 430, 12.06.2016, 1♀.

General distribution. Palaearctic, Oriental.

Remarks. It is found in mixed and deciduous forests, in glades.

***Tenthredo omissa* (Forster, 1844)**

Distribution in RM. Temnikov district, Bolshie Berezniki district (Ruchin and Lengesova 2012).

Material. quar. 435, 25.07.2009, 1♀; quar. 82, 28.07.2015, 1♀; cord. Plotomoika, 3.08.2014, 9.08.2014, 1♂, 1♀; cord. Taratinsky, 16.08.2015, 1♀; quar. 420, 22.08.2015, 1♀; quar. 431, 23.06.2013, 1♂.

General distribution. Palaearctic.

Remarks. It is common species. Occurs in glades, forest edges.

*****Tenthredo procera* Klug, 1817**

Distribution in RM. Bolshie Berezniki district (Ruchin and Lengesova 2012).

Material. quar. 417, 3.06.2016, 1♀.

General distribution. West Palaearctic.

Remarks. It is found in a clearing in a mixed forest.

****Tenthredo scrophulariae* Linnaeus, 1758**

Material. quar. 431, 23.06.2013, 1♀; quar. 421, 13.06.2016, 2♂.

General distribution. West Palaearctic.

Remarks. It is found in a clearing in a mixed forest.

****Tenthredo sobrina* Eversmann, 1847**

Material. quar. 433, 7.06.2016, 1♂.

General distribution. Palaearctic.

Remarks. It is found in a clearing in a mixed forest.

****Tenthredo zona* Klug, 1817**

Material. quar. 397, 6.08.2017, 1♂.

General distribution. West Palaearctic.

Remarks. It is found on the edge of a mixed forest.

*****Tenthredo zonula* Klug, 1817**

Distribution in RM. Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 429, 15.06.2016, 2♂.

General distribution. West Palaearctic.

Remarks. It is found on the side of a dirt road in a pine forest.

*****Tenthredopsis litterata* (Geoffroy, 1785)**

Distribution in RM. Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 384, 12.06.2014, 1♂.

General distribution. Palaearctic.

Remarks. It is found on the edge of a mixed forest.

*****Tenthredopsis nassata* (Linnaeus, 1767)**

Distribution in RM. Ichalki district (Ruchin and Lengesova 2012).

Material. quar. 421, 8.06.2014, 2♀; quar. 360, 21.06.2015, 1♀; quar. 376, 19.06.2016, 1♀; quar. 381, 21.06.2015, 1♀, Pushta settlement, 3.06.2012, 9.06.2012, 11.06.2012, 3.08.2014, 4♀; quar. 408, 10.06.2012, 1♀; cord. Taratinsky, 19.06.2016, 1♀; quar. 435, 5.07.2016 (Artaev O.N.); cord. Srednyaya Melnitsa, 18.06.2016, 1♀; quar. 368, 11.06.2016, 1♂; quar. 421, 13.06.2016, 1♂.

General distribution. Palaearctic.

Remarks. It is one of the highly abundant species. It is found everywhere in different habitats.

*****Tenthredopsis stigma* (Fabricius, 1798)**

Material. quar. 142, 29.05.2016, 1♀.

General distribution. West Palaearctic.

Remarks. It is found on the edge of the pine forest.

Discussion

The biodiversity of protected areas is usually significantly higher than in surroundings (Schulman et al. 2007; Cantú-Salazar and Gaston 2010; Françoso et al. 2015; Egorov et al. 2020; Mohd-Azlan et al. 2020; Polevoi 2021). The varying conservation status of landscapes, the time since formation of protected areas (their age), the ecosystem uniqueness, the absence of anthropogenic impacts and other factors are also important (Williams et al. 2011; Tantipisanuh et al. 2016; Dorji et al. 2019; Ahissa et al. 2020; Khapugin 2020; Sergeev 2020; Shinkarenko et al. 2021). Unfortunately, in many cases, insect diversity in protected areas is less well studied than that of other groups insect diversity in protected areas is less studied than that of other groups (Vertebrata). However, it has already been shown that insects account for almost 80% of the total number of terrestrial species (Samways 2007; Cardoso et al. 2011).

The results obtained on the diversity of Symphyta of the Mordovia State Nature Reserve are quite comparable with those in some other protected areas where Hymenoptera have been well studied, both in Russia and outside the country (Table 1). Table 1 presents data about the fauna of sawflies in protected areas located in temperate latitudes. These protected areas differ in area and degree of the study of the fauna. Over several years of research, it has been possible to identify a fairly complete fauna of Symphyta in the protected area.

Symphyta species diversity is mostly due to the little-disturbed and diverse ecosystems of the Mordovia State Nature Reserve and the lack of anthropogenic pressure as compared to the adjacent territories, which were actively developed by man.The high predominance of forest ecosystems (89.3% of the total area) determines the composition of the sawfly fauna. These are mainly forest species living under the forest cover, in the shrub layer, on forest margins, or in forest clearings. This area has the highest diversity of forest ecosystems (broad-leaved forests, pine forests, mixed forests, wet alder forests), combined with the presence of meadows, floodplain meadows and water bodies. This is consistent with other studies confirming greater species diversity in ecotone communities (Barrows et al. 2014; Juen et al. 2014; Kozlov et al. 2015; Ruchin and Khapugin 2019; Zamotajlov et al. 2019).

Table 1. Comparative Symphyta species richness in some protected areas of Russia and other countries.

Protected areas	Country	Area, km^2	Number of species	References
Mordovia State Nature Reserve	Russia	321	169	Present research
Zhiguli State Nature Biosphere Reserve	Russia	231	68	Cadastre of invertebrates 2007
State Nature Reserve “Galichya Gora”	Russia	2,3	112	Kuznetsova 1990
Berezina State Nature Reserve	Belarus	852	143	Insects of the Berezina Nature Reserve 1989
National Park “Belovezhskaya pushcha”	Belarus	2101	36	Catalogue of insects 2017
Swiss National Park	Switzerland	172	114	Benson 1961
Low Tatras National Park	Slovakia	782	200	Roller et al. 2006
Kopacki rit Nature Park	Croatia	24	73	Perovic et al. 2006
Šumava National Park	Czech Republic	680	173	Beneš 2014
Pyrenees National Park	France	457	176	Savina et al. 2013
Danube Delta Reserve	Ukraine	706	52	Ermolenko 1998
Gesäuse National Park	Austria	110	174	Netzberger 2017
Brandesbachtal	Germany	209	230	Taeger & Taeger 1997
Látrány Puszta Nature Reserve Area	Hungary	22	87	Haris 2003

Based on the results obtained, we plan to further study the dynamics of the number of individual species, trophic relationships with plants. We also plan to study parasites and other aspects of the established fauna of the Symphyta species.

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